

From the Author

1488 i. 6.

PHYSIOLOGICAL
R E V E R I E S.

~~NEVE,~~
Intellecta prius quam sint, contempta relinquant.

LUCRETIVS.



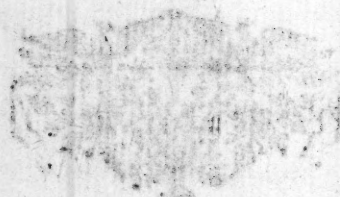
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PHYSIOLOGICAL REVERIES.

IN the course of my perusal of certain physiological treatises, there occurring to me some reflexions on certain important points of the animal economy, I venture to commit them to paper, with this advertence, that they are rather crude beginnings of ideas, or even *reveries*, than proposed as clear and authenticated conceptions. Why then offer them to the public? The question is surely a fair one; nor will my answer, I hope, appear disrespectful or unsatisfactory. The doubts I had started seemed to me worth liquidation; which it not lying in my way to pursue, by practical researches in anatomy, I thought I could not do better than, by a publication, to give them the chance of falling in the way of such as join to the ability of examining them, candor, and a superiority to the vul-

gar prejudice against attempters of discoveries, or proposers of new opinions: To such I submit with all due deference the following points, on which I mean to hazard my thoughts; *Respiration*, the *Salivary Secretion*, and *Fevers*.

On RESPIRATION.

From the first moment that the air rushes into the lungs of a new-born infant, and occasions that revolution by which, now detached from the maternal womb, it commences a new life, a life more its own; the vital mechanism proceeds on principles, if not different, at least differently modified from those on which it subsisted in its foetus-condition. To specify or ascertain those differences is not here essential, it is enough to observe that the admission of the external air begins that process of at least an augmented respiration, which does not end but with the life of the individual. I use here the word augmented to avoid any chicanery about the foetus's share, whatever it may be, in that common mass of air with which the body of the mother is, like all other animal bodies, intimately pervaded or imbibed.

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But as to that respiration itself, which, after the birth, is so indispensable to vitality, besides the greater springs of life put into motion by it, such as the lungs, the central or phrenic regions, with the oscillation correspondent to them in the brain; besides the intestinal peristole, there appears to me a probability of an ulterior extension and communication of its power, to minuter parts of the vascular system, which, if admitted by reason, or verified by experiments, will not only account for a very essential part of the animal fabric, but open views of the greatest importance to the human health.

There are, as every one knows, an innumerable multitude of pores, spread over the surface of the human body, which are plainly the emunctories or channels of discharge; for vitiated, redundant, or, in short, perspirable matter. This is universally allowed. There exists also, as plainly on the surface of animal bodies (to say nothing of vegetables) a resorbent faculty. Now, in order to supply organs for that resorbence or inhalation, several physicians have imagined a set of resorbent vessels distinct from the exhaling ones. Whereas if it should be true that

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the act of inhalation is, in the perspiratory ducts, but alternative to the act of exhalation, and that the mouths of all those pores, in analogy to the mouth itself, keep on one continual vicissitude of respiration and expiration, in true time with the great organs of breath from which they possibly derive their motion, then may these smaller ducts be, without any violence to sense, presumed identical. Thus will that needless operoseness of a double apparatus of pores be spared, and the simplicity of Nature be preserved, whose general character is that of performing her work by the fewest instruments possible, while some instances, which, at the first superficial view, appear exceptions to this general axiom, would probably, on just examination, only confirm it.

However among other corollaries to this idea, supposing it verifiable, it may be observed, that that quickness of contagious miasms penetrating instantaneously to the central regions of vitality, to the diaphragm, to the heart, and its adjacencies, with which the communication of the pores must in the act of their inhalation be immediate,

seems more plausibly, more rationally to be accounted for than by the slower and more intricate progress of circulation through the blood.

This would also re-inforce the arguments in favor of the efficacy of a good air in numbers of diseases, and perhaps in all, by showing the human body, open to the admission of that fluid through millions of air-mouths with which its surface is every where perforated like a sieve, and sucks in not only the airs and vapors of the great atmosphere, but those of the small one formed by its own perspiration, which accounts for the sensible refreshment experienced on a renovation of air, or on the change of linnen: In short this diffusive chain-work of air-pumps spread over and through the whole body of man, gives you the idea of one great pneumatic engine, the incessant play of which, at once, keeps up the motion of our hydraulic machinery, and fans that vital fire in virtue of which the chymical laboratory within us is perpetually at work to operate so many effects which might be stiled admirable indeed, if one did not consider that nothing is too great for the Author of Nature to produce,

duce, without its having any right to surprize his creatures.

On the SALIVARY SECRETION.

There can hardly be a more common proposition than that the aliments serve to repair the naturally necessary waste of the animal substance, and doubtless the proposition is incontestable so far as it means that without aliments the animal could not subsist. My only objection to this mode of expression is, that I think it rather points out aliments as a principal than an accessory, as a first than a secondary instrument of reparation. And as in points so infinitely important, even the minutest error in principles may make very great and essential differences in conclusions, I hope I shall not be accused of cavilling, for my attempt to reduce this point to what I imagine, vainly perhaps, a greater precision.

To the objection however which I propose to specify here, I was led by a reflexion that Nature, generally
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speaking, affects in most of her operations a certain respect to order, and to the laws of mutual analogy, and especially that her greatest works she rarely executes without a due gradation. *Natura nil facit per saltum*, is a physical axiom only

Omnibus et lippis notum et tonsoribus—— Hor.

For her propagation of animal individuals, she employs a *generative fluid*. Is it then a very forced idea to conjecture, that for the preservation of individuals she might analogously employ a *reparative fluid*? An innate, inherent fluid for *preservation*, in like manner as the seminal one for *propagation*. Different as the destinations may be of the seminal and the salivary liquids, there appears a striking similarity in some points between them: they are both secretions from the arterial blood; they are both digested and prepared in their respective reservoirs, they have both their appropriate emissary vessels; they are both liable to reabsorption into the common mass of blood, and are both kept up by recruits from the animal chemistry.

As then the salivary fluid evidently re-enters that blood from which it is originally a secretion, being by deglu-

tition, both at meals, and out of meals, sent down to the stomach in a quantity *full-sufficient* for the requisite reparations, it is surely no great strain of conjecture to suppose that the transition from a fluid so greatly elaborated, fermented, recocted into a more perfect animality, must be less violent than from the chilification of the crude, adventitious aliments, which are nevertheless so indisputably essential to the supply of that preservative fluid, by means of its power of assimilating or reducing them to a degree of homogeneity with itself; of which they on their part become, in some measure, the vehicle, in its recirculation with acquired maturity and perfection, they being intimately blended with it, as the liquid of the *prostates* with the seminal secretion.

You will easily, by this, observe, that I do not mean to exclude or to detract from the collateral important use of the salivary secretion towards digestion, in concurrence with the gastric and other juices. The great virtue of Nature is, in her plan of simplicity, to draw simultaneously from one instrument various and very consistent, if not even co-adjutorial services. It is even on the saliva's acting,

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as so specific a menstruum on our aliments, that I principally found its power of assimilating those aliments to its own nature, and of converting them thereby into sources of its own recruit. It is in virtue of this menstrual or dissolvent energy, that with the concurrence of the other digestive powers it makes of the alimentary mass, a *matrix* or bed, of which it is itself the vegetative seed, and thence extracting its own increase, like a tree from the ground in which it has been planted, it spreads in the distribution of itself to all the parts it is destined to repair, containing in itself all the various principles required for those repairs ; much as the feminal liquid contains, in miniature, all the principles of future animality, to be unfolded, in due season, by their natural growth. Who can any more distinguish in the feminal secretions the various constitutive parts of the animal that is to be *generated*, than in the salivary secretion the various parts by which the animal is incessantly to be *repaired*? Both these points are hitherto impenetrable secrets of the animal economy ; it is only for our reason to tell us that the aliments themselves can hardly be imagined, without a greater pre-

paration than what the common opinion of the process of nutrition gives them, capable of receiving the impression of animality, or of repairing *immediately* any, unless perhaps some of the very grosser parts of the body; as for example, the *materia adiposa*, or fat, which, where it exceeds the uses of nature, is rather a diseased concretion, a stagnated deposit of a superfluity of indigested nourishment, than nourishment itself.

But besides the so presumable internal energy of the salivary secretion, can its *reparative* virtue in the healing and consolidation of external wounds admit of a doubt? The instinct-guided animals and the nature-taught savages have immediate recourse to it on any hurt, or solution of continuity, and probably in the mixture of the saliva with the vulnerary herbs which some of the savages apply, lies the best part of the remedy. *Aristotle* erects it into a sure preservative against the bite of snakes: and *Aldrovandus* tells us, that the quacks of his country made use of it as a topical cure for such bites: in its efficacy most likely consisted the whole *nostrum* of those jugglers the *Pfilli*,

in their exsuction of the venom from the parts affected.

—————*Par lingua potentibus herbis.* Luc.

Boerhaave attributes such virtue to it that speaking of dry, caustic, salt meats, hardened by smoke, he observes, that their receiving a copious mixture of saliva from the mastication necessary to get them down, takes off a great part of their unfriendliness to the human body, and by its balsamic quality, renders them incomparably less noxious than without a sufficiency of that vehicle, as an antidote, they would otherwise be.

I confess however that till the idea of the aliments, not being reparative in the first instance, occurred to me, an idea of which I nevertheless am far from presuming to warrant the solidity; I could not well conceive how, for example, in horses and other granivorous animals, such seemingly heterogeneous, unsucculent food, as hay, straw, oats, &c. could in so short a process be immediately converted into the most essential parts of animal substance, such as bones, cartilages, fibres, muscles, &c. or assume a sensible character of animality, whereas by the admission
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of this intermediary supply of the salivary secretion, being the primary reparative fluid, such a gradual assimilation of the alimentary mass may with the less violence to apprehension be accounted for: Nay, this reparative fluid becomes evidently the more copious for the greater driness of the food provoking the more mastication. Probably this may be one of the reasons why *Boerhaave* recommends the driest meats (not salt meats however, which he says are only the *less* noxious for the saliva necessary to their deglutition) as dry meats requiring the more mastication; that pretious first digestion, never with impunity neglected, or slightly performed, carry down with them the more of that salutary, balmy and reparative fluid: while *Tronchin* on the other hand, proscribes soups, very likely for a reason built on the same principle; for that being too forbile, too easy of deglutition, they thereby prevent the stomach from receiving a sufficient quantity of the true nutritious matter: and that it resides principally in the saliva, may be collected from one very obvious and pregnant observation; that even the richest soups cannot alone afford a satisfactory meal. There is commonly joined or added to them
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some solid matter for a mastication, that will produce more of the saliva, and consequently more nourishment and a better digestion.

Should, however, the idea of this secretion, being primarily instrumental to nutrition, not be quite destitute of reality, the inference is surely not repugnant to our notions of the wisdom of Nature: Her two great, capital ends, *preservation* and *generation* of individuals, will, on that supposition, appear uniformly provided for by every animal's bringing into existence with it, its own *reparative fluid*, to which in due season the *generative fluid* is superadded, while by means of the reparative fluid the aliments form only an indirect and secondary, though certainly an indispensable source of supplies to the whole animal economy.

On FEVERS.

If the influence of language on opinions was not so well known, what I have here to say on fevers, might need an apology for its appearance of cavillation at mere

words; for as to any novelty of opinion on this subject, there is, I confess it, at bottom, little or none.

If that expression of a person's *dying of a fever* was never used but in common conversation, and to save a recourse to an explanation, perhaps, not always obtainable, from the nature or situation of the febrific cause, the impropriety might not deserve or require animadversion. But when this mode of speaking drops from men of the Art, from Physicians who know better, or who ought to know better, and from whom it is but just to expect more correctness of definition, and fewer sins against a philosophical propriety of expression, especially in such capital points, the objection ceases to be a cavil, and may not perhaps entirely deserve disregard.

The truth is, that since the creation of man, it is highly probable, that no one, I repeat it, no one ever died of a fever, though very few, if *any*, without one; for if death comes on in consequence of a chronical disorder, of a dropfy, for example, which of all distempers is the least susceptible of fever, or of mere old age placidly sinking
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into its arms, the fever will sometimes be too flow, or too faint for human perception. In cases of sudden strokes of death, especially a violent death, the fever is too instantaneously transient to offer much, or perhaps any signs of it to observation.

This is so far from being a new doctrine, that it may be gathered from those physicians themselves who divide fevers into two classes, *essential*, and *symptomatical*; and these respectively susceptible of numerous subdivisions, into the enumeration of which it is foreign from my point to enter here. For as to the first distinction of *essential* and *symptomatical*, it is absolutely a false one, even according to the showing of those who unconsequentially make use of it, and do not enough consider into what errors they may lead the less skilful, who do not sufficiently attend to the bottom of things.

Heu! quantas tenebras offundunt nomina rebus!

Now, by inferences fairly to be drawn from their own definitions, there is in Nature, no such thing, nor ever was, as an *essential fever* of any kind: those fevers which are by them called *essential fevers*, as proceeding from

any disorder in the humors, or solids, being in fact just as *symptomatical* as the others, which are excited by any local affection, apparent or non-apparent, by the small pox, the *rouge* (barbarously contracted into the word *thrush*) by the *erisipela*, by the gout, by contusions, wounds, burns, &c.

The very sound of a fever, it is true, from a vulgar error, carries with it an idea of something hostile to human nature; whereas the solemn truth is, that, of all the remedies provided by the bountiful wisdom of providence, a fever is the greatest, and not rarely the most favorably efficacious one. If it sometimes fails of saving the patient, it is only because the disease it comes to cure is too mighty for it, but it is for ever in an intention of cure that it does come; and never, never, in that of his detriment or destruction. "A man dies of a putrid fever." No: He dies of that putrefaction which the fever could not overcome. The very word fever only signifies an increase of the vital fire; and the vital fire is never thus increased, but in aid and supplementally to the common genial warmth of current life, of itself insufficient to resist the enemy, to purify some foulness of the humors, to open
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some obstruction, to effectuate some discharge of peccant or noxious matter, or to concoct some morbid crudity.

Nothing then can well be less excusable than, in such points of life and death, to bestow on things names so likely to confound or to convey false ideas of them. And surely it is an indefensible absurdity to give to those medicines, by which fevers are supposed to be lessened or removed, the appellation of *febrifuges*! when nothing is more certain than that such medicines must, in all true theory and sound practice, be judged to act rather as auxiliaries to the fever, and in conjunction with it, in attacking that cause, whatever it may be, against which the fever is, by the special direction and command of Nature, exerting its powers. The most that such medicines can pretend to, is to second the operations of the fever, which will naturally diminish and cease of itself, with the diminution or cessation of its cause. It is not then quite so fair for such medicines, not only to usurp *all* the honors of the triumph, but to assume a name denotative of their victory over their own ally; and what is more intolerable yet, they assume it when they shall have interrupted, as

they incomparably the ofteneft do, the endeavours of the fever, to relieve and fave the patient, and have at leaft retarded that cure which their impertinence could not totally hinder, or prevent the prevalence of Nature over the abfurdities of pragmatifical and treacheroufly officious Art. A real remedy then that concurs with the fever in its intention of cure, might furely with not lefs juftice be termed a MORBIFUGE, than a *Febrifuge*.

This doctrine however of a fever's being always *fmptom-atical* and never *effential*, will receive a farther confirmation from this confideration, that on the bodies being opened of thofe dying (as it is fo improperly phrafed) of a fever, the caufes, generally fpeaking, are found of that fever of which they are faid to have died: and where thofe caufes are non-apparent, which is extremely rare indeed, they may fairly be prefumed to efcape perception, either by the great changes that enfue immediately, or very foon after death, or by their local fituation in parts unobvious to anatomy, or not fufpected.

Intermittent fevers and agues form another ftrong proof of the friendlinefs of the febrile, or increafed heat of life.

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It comes on to the relief of that shuddering fit which has in its nature a tendency to the cold of death, and is bred by various morbid causes. The alternatives of cold and heat are palpably then vicissitudes of the defeats of the principle of death, and of the victories of that of life: But when by bad management, or other causes, the distemper prevails, the fever it is that is conquered and yields the field to the fatal morbid cause; for it is in the cold fit that we die without any fever, but that common and possibly unperceivable peripneumonial one; where life, cleaving to the principles of respiration, makes its last stand about the lungs, and maintains its final struggle against the invasions of death.

Once more I beg leave to observe, that I do not offer this my attribution of beneficence to fevers, as any new remark: All the best physicians are sensible of it, and many have mentioned it in their works, but few or none that I have met with, have done justice enough to that beneficence, or extended it enough. *Sydenham* indeed, among many others, has not hesitated to admit of fevers being often occasional efforts of nature in favor of the patient. But
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this is not enough. They never supravene as enemies, but constantly, and without exception, as auxiliaries, as friends, though sometimes through the superior malignance of the disease, ineffectual ones. But what then? Is there any more propriety in saying that a patient dies of a fever, than in saying he died of a *Hippocrates*, or of a *Galen*, or of any physician who had honestly exerted the utmost of his skill to save him?

A superficial reasoner might here object, that since a fever is such an acknowledged friend, it should seem good practice occasionally to increase its strength; and so it undoubtedly would, if that strength could be increased without at the same time increasing the cause or *fomes* of the fever, or without creating another cause that should complicate the disorder. The march of Nature is not to be rashly forced. A patient, for example, under the circumstance of such a wound as shall have brought on a fever by its consequences, especially, to the phrenic regions, if he increases that fever, or if after it shall have been removed, he brings it on again by any impropriety of diet, bad management, or irregularity of conduct, he may and

often does perish under his disorder, but not by the fever which will have been raised or returned with augmented violence to his relief, though not always successfully; for reasons which to practitioners are obvious, and on which it would be superfluous to enter here.

The advantages, however of relief to most disorders by a fever, do not, doubtless for very wise purposes of Nature, come clear to us; or without her making us pay, what self-love engages us to conceive, very dearly for the efforts which the raising the vital warmth into a fever will have cost her. A long weakness, languor, and even a transition into other disorders are often the consequences of her assistance. The conflagration will have indeed consumed the enemy, but too frequently leaves behind it, as in palaces that have suffered by fire, dreadful marks of its fury. In short, fevers are to the human body much in the nature of *pain*; of those pains, I say, to which Nature puts us in some of her efforts to rid us of an obstruction, or of some noxious matter: They are born with impatience, they seem evils, and so far as they are pains, certainly are such; but they ofteneft ultimately issue in our
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good, which is ever the primary intention of them. In some diseases as in the dysentery, what excruciating pain do not the endeavours of nature to keep off a mortification cost the unhappy patient? But when that shall have taken place, the pain all on a sudden ceases, and he presently dies. Happy they! who can with manly fortitude occasionally bear pain, and hold over, without being compelled by the extremity of torture to have recourse to the treacherous palliations of narcotics, which for the moment stupify indeed the pain, but give fresh fury and force to the disease, and dose him into perdition! How totally different that sweet refreshing sleep procured by the hand of Nature, from that obtained from the perfidious flattery of Art, in those rank poisons, which are the modern *Herod* of millions of innocent children! In like manner, how different in its effect is the critical discharge procured by a natural sweat, from the premature forced ones by pharmacy! But this is a digression for which I ask pardon.

That fevers are naturally beneficial, there occurs also another strong presumptive proof, drawn from a modern practice. When an inoculation for the small pox has failed

failed of its end, the bringing on that distemper, it has excited a fever which has incidentally carried off other distempers, to which the patient was precedently subject, and for which it had not been so much as thought of. This is an experiment however which I should be very loth to recommend: I only adduce the instance as a corroborative of my argument.

In fevers especially, the Chinese highly disapprove our readiness with the lancet: They have a great aversion against bleeding. "We prefer (say they) to the lessening of the quantity of boiling blood, the removal of the fewel of that fire which sets it a-boiling." We may laugh at their practice; perhaps we had better imitate it: At least I could never learn, that fevers under their hands were more fatal, than under those of our learned Faculty here.

However, besides my objection to the abovementioned impropriety of expression, I hope I may be allowed to express a wish for a recourse to a new theory of fevers, since the old one has all the characters of falsity, bad reason-

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ing, worse practice, and success accordingly. And though, in the cause of public utility, in the consciousness of my supreme regard for truth, I neither love nor fear singularity, yet in my just aversion to all air of paradox, to all spirit of needless innovation, and especially to all self-sufficiency, it cannot be but with great satisfaction that I see my opinion countenanced by a very sensible physician, with a quotation from whom I conclude.

As to the definition of fevers, says he, "I am not much averse from concurring in opinion with several learned physicians, that the disembroiling this chaos will not easily be accomplished, unless we renounce every thing that has been hitherto said upon them, and go to work upon new foundations."

LIEUTAUD, *Précis de la Médecine.*

And to this I heartily subscribe with him, being perfectly clear that false theories in physic, and especially in fevers, have made, and continue to make greater havoc among mankind, than, put them all together, war, famine, pestilence, and the ambition of Princes.

E T N I S.



